Planting Green Field Trials in western New York. Cover crop fields were planted with a mix of wheat, oats, turnips, sunflower and clover. Control plots are darker rectangle areas.

RL Jeffres & Sons, Inc.

INCREASING PROFITS WITH COVER CROPPING AND PLANTING GREEN

Introduction

Brothers Tom and Jim Jeffres are fourth-generation owners of RL Jeffres & Sons, Inc., which they operate with their families in western New York. Their great-grandfather established a 150-acre livestock farm in 1914. Today, the farm spans 11,000 acres planted with a mix of crops including dairy forages, grains, and processing vegetables. The farm also offers custom tillage, planting, and manure spreading and is one of two custom pea harvesters in the state.

Reducing Tillage

In the early 2000s the Jeffres hired a neighbor to strip till a few acres. The benefits were noticeable the first fall when they could harvest crops without sinking to the bottom of the plow pan.

"We spent about five years comparing zone or strip tilled fields to conventional tilled fields and our yields were almost identical," Tom said. "But the savings of a single pass with the strip tiller versus several passes with conventional equipment really stood out."

Strip tilling became their common practice for corn, wheat, beans, and other crops. Some vegetables and fine seeded crops still require conventional tillage.

Cover Cropping and Planting Green

Tom and Jim's father began using cover crops in the 1980s. Today, they use several varieties depending on cash crop harvest dates. For example, in mid-June, they plant a mix of wheat, oats, turnips, sunflowers, and sometimes clover. Late in the season they use a wheat/oat blend.

"With early planting of blended cover crops we get a huge biomass that will survive winter kill to strip till," Tom explained. "Late fall we plant wheat and oats, to hold the ground after the oats winter kill."

RL Jeffres

Over time, they have observed less soil erosion because of the combined use of cover cropping and zone or strip tilling.

"Through the use of strip tilling and cover cropping, our soils are more uniform, and it's helped build the soil structure," he added.

Tom reports seeing greater residual nitrogen in the fields too, which he attributes to the use of cover crops. This, combined with his practice of injecting manure has enabled him to reduce his side-dressing applications and need to purchase commercial fertilizers.

Economics of Planting Green

RL Jeffres & Sons, Inc. is one of nine farms in the Genesee River Demonstration Farm Network that participated in an on-farm study (2021) to observe the impact of planting grain crops into living cover crops, or "planting green." By delaying cover crop termination, farmers can maximize the soil health benefits of cover crops while mitigating difficulties of wet spring soils and late emergent weeds.

Tom's trial included two termination timings, and three cover crop planting rates—no cover planted (control), a "farmer-rate" (1X; treatment) and a double "farmer rate" (2X; treatment). Control and treatment plots were divided in two. Half was sprayed to terminate the cover crop several days prior to cash crop planting (pre-plant) while the other half was left to be planted green and then terminated (planting green). The treatments were a mix of turnips, crimson clover, oats, and sunflowers.

Please note harvesting difficulties with the pre-plant termination plots caused a lack of measured yield data which limited the analysis. To maximize the value of the available data, analysts estimated yields for the pre-plant termination plots using the relationship for the control pre-plant and control planting green plots, and the yields for the planting green treatment plots. Study results reflect a combination of measured and estimated yields for the 2021 corn grain harvest.

A marginal approach compared cover crop treatment plots to control plots. Analysts calculated changes, differences in value of production, costs, and resulting net income (profit) using values of crops produced and selected costs. Analyses consider only items that differed between the control and treatment plots, and the values of any differences. The results varied by comparison (Table1). Recall that analyses utilized yield estimates for pre plant plots, noted by "(est)" in Table 1.

Increases or decreases in the value of production for the 2021 corn grain harvest equaled the yield difference between the control and treatment plots multiplied by the price of corn

Table 1. Changes in value of production, costs, and farm income above costs (net farm income, profit) by Treatment versus Control Counterpart

AFT Planting Green Study, Genesee River Watershed Demonstration Farm Network, RL Jeffres & Sons, Inc., Wyoming County, NY, 2021 Analysis

	TREATMENT			
	1X Treatment vs No Cover Control Counterpart		2X Treatment (est) vs No Cover Control Counterpart	
	Pre-Plant Termination (est.) $/Acre	Planting Green $/Acre	Pre-Plant Termination (est.) $/Acre	Planting Green $/Acre
ITEM	**Net Income (Profit) Postitive Effects**			
	Increases in Total Value of Production			
Value of additional corn grain harvested	$24.00	$24.00	$144.00	$138.00
Total Value of Production Increases	**$24.00**	**$24.00**	**$144.00**	**$138.00**
	Cost Decreases			
None	$0.00	$0.00	$0.00	$0.00
Total Decreased Cost	**$0.00**	**$0.00**	**$0.00**	**$0.00**
Total Increase Net Income (Profit)	**$24.00**	**$24.00**	**$144.00**	**$138.00**
	Net Income (Profit) Negative Effects			
	Decreases in Total Value of Production (TVP)			
None	$0.00	$0.00	$0.00	$0.00
Total Value of Production Decreases	**$0.00**	**$0.00**	**$0.00**	**$0.00**
	Cost Increases			
Cover Crop Planting	$15.40	$15.40	$15.40	$15.40
Cover Crop Seed	$14.70	$14.70	$29.40	$29.40
Cover Crop Termination Machinery	$7.50	$7.50	$7.50	$7.50
Cover Crop Termination Herbicides	$8.00	$8.00	$8.00	$8.00
Total Increased Cost	**$45.60**	**$45.60**	**$60.30**	**$60.30**
Total Decrease Net Income (Profit)	**$45.60**	**$45.60**	**$60.30**	**$60.30**
Annual Change in Net Income (Profit)	**-$21.60**	**-$21.60**	**$83.70**	**$77.70**

All values based on reported output and input prices at 2021 price levels.
Analyses reflect missing yield data for treatment plots 'Pre-plant 1X Cover' and 'Pre-plant 2X Cover,' estimates based upon available trial data are used.

grain, $6.00 per bushel. Overall, due to greater yields, measured and estimated, all treatment plots generated values of corn grain production greater than corresponding control plots.

Many input costs were unchanged among the plots, and analysts did not identify any items where a treatment's cost was less than the corresponding control. When comparing treatment to control plots, analysts noted cost increases for four expense items, categories: "Cover Crop Planting," "Cover Crop Seed," "Cover Crop Termination Machinery," and "Cover Crop Termination Herbicides."

When comparing cost differences between the 1X treatment and control plot, cost increases totaled $45.60. When comparing the 2X treatment, cost increases totaled $60.30 per acre. Machinery and labor cost increases associated with the "Cover Crop Planting" items were the same by treatment plot, while the "Cover Crop Seed" item differed due to doubling the seeding rate.

Difference in profit ranged from a low of -$21.60/acre for the two 1X treatment plots to a high of $83.70/acre for the 2X pre-plant treatment versus no cover pre-plant control, and averaged $30/acre.

Results suggest that on average, implemented soil health practices were associated with an increase in profit. Considering variability of the results, all treatment plots yielded similar or greater levels of economic performance, difference in profit, relative to corresponding control plots.

Closing Thoughts

The Jeffres brothers embrace on-farm trials because they are always looking to learn new methods to farm better, to build soil health and increase on-farm efficiencies and yields.

"If there's something better out there, we want to know about it," Tom said.

Tom and his farming team continue to strive to make their business profitable and environmentally sustainable. The farm was named the 2022 New York State Ag Society Business of the Year and received the Agricultural Environmental Management Award in 2007 to recognize their ongoing conservation efforts promoting soil and water quality.

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